Surgeons and HIV

Surgeons' voices have been little heard in the discussions and controversies over infection with the human immunodeficiency virus (HIV). Yet there is bound to be a growing number of patients infected with HIV who will come into contact with surgeons in three categories: those who have AIDS and surgical complications or who need invasive treatments; those who present with specific surgical problems related to their lifestyle—in our practice anorectal disease; and, finally, patients who have injuries or problems unrelated to viral infection that require surgical management. Surgeons for their part are the people who come in contact with blood in the least controllable of circumstances. Are surgeons then at high occupational risk, and if so what should be done about it? Furthermore, are there any lessons for surgery in general which can be distilled from the need to consider the effects of dangerous infections on surgical practice? An international meeting on AIDS and surgery coordinated from St Mary's Hospital Medical School was held at the end of last year to discuss some of these questions.

Surgeons injure themselves as well as their patients. Glove puncture occurs in up to 30% of operations (M Fell, paper presented at the Royal College of Surgeons, November 1987), and self injury from needles or knives in 15-20%. Yet recorded cases of seroconversion in surgeons—as in other health care personnel—are virtually non-existent[1]: one female surgeon in central Africa has died of AIDS.[2] Nevertheless as exposure increases then any risk to an individual surgeon must rise even if it is still low in absolute terms. We cannot yet determine objectively at what degree of risk special precautions should be taken and what the measures should be. Until we can we should keep the risk down. But how?

The objections to routine screening for antibodies to HIV have been well rehearsed, and, irrespective of legal and moral aspects, the procedure has loopholes because of the time lapse between infection and seroconversion. We think that we can identify in our patients a (predominantly homosexual) subgroup who are "high risk"; again this approach will leave some patients undetected, particularly if heterosexual spread becomes more common. We do make special efforts when operating to reduce the risk of inoculation in such patients, adopting similar precautions to those recommended for patients with hepatitis B surface antigen. But as the number of known and unknown patients with HIV viraemia grows a more universal approach may be necessary and has already been adopted in San Francisco, where surgeons at the general hospital assume that all patients carry the virus. The elaborate precautions this assumption demands—such as double gloves, goggles or visors, and impervious disposable clothing—are costly, irksome, and without proved efficacy. As with other problems raised by this new infection, they are adopted because of surgeons' perceptions of the problem rather than its reality. None of us wishes to be the first proved case of AIDS that originated from inoculation in the operating theatre, and if we can perceive methods of reducing risk it is hard to deny us their use. Precautions, irrespective of their real value, serve to heighten awareness.

Beyond these apparently selfish considerations lies the need to improve safety for surgeons. The concept that we must accept risk as part of the medical tradition of putting the patient first is tenable only if that risk is unavoidable. An opportunity for a radical rethink of our techniques was missed when the hazards of hepatitis were first recognised, and, though careful technique keeps the incidence low, surgeons still get hepatitis. The appearance of HIV gives a further opportunity to consider change.

We need to re-examine the basic techniques we use. Gloves, introduced at the turn of the century by Halsted, were designed to protect the surgical team as much as the patient, but they are vulnerable in particular areas such as the forefingers.[1] Manufacturers need to heed these observations and provide selective reinforcement. Knives and needles, the chief causes of self-injury, are primitive weapons, virtually unchanged throughout the recorded history of surgery. Other devices are now becoming available: the laser scalpel works but is slow; ultrasonic dissection by local and selective destruction of tissue is an established technique in liver surgery; and stapling devices, though still lacking sophistication and adaptability, are accepted tools in gastrointestinal surgery. The next generation of these devices will probably have some "intelligence" built in, making them more responsive and flexible. Glues for tissues have been widely investigated for many years; they are not yet at the stage of widespread application but will surely improve. In addition, given the growth of advanced robotics, there might be a return to "no touch" or "stand off" surgery, in which the surgeon is distanced from direct contact with tissue by a device or an instrument. Originally this was seen as a way of protecting the patient but now it may also ensure greater safety for the surgeon.

Threats, albeit small in reality, generate intense thinking about their mitigation. The surgical aspects of HIV infection should concentrate surgical minds wonderfully and encourage them to innovate.

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Vitamins and neural tube defects

Recent years have seen much controversy over vitamin supplementation during pregnancy to reduce the incidence of neural tube defects. Firstly, we had the arguments over whether it was ethical to conduct a randomised trial of supplementation after Smithells and others had shown that the incidence of neural tube defects was strikingly reduced in their study.[1] Secondly, great concern was expressed when Pregnavite Forte F was removed from the approved list because it was widely used in clinical practice and was the only multivitamin preparation for which many of the data on efficacy exist. Eventually the Committee on Safety of Medicines granted a limited licence for Pregnavite Forte F to be used as a supplement for women who have previously given birth to one or more babies (or aborted a fetus) with a

neural tube defect. But many questions remain to be resolved.

The Committee on Safety of Medicines may have to review its decision when new evidence has been accumulated because the data available were mainly from only one group—that of Smithells. Although the data have come from many centres from a wide geographical area, including parts of Britain with low and high risks for neural tube defects,[2] critics have correctly emphasised the lack of randomised controls.[3] An apparent protective effect might be caused by systematic bias in selecting controls: women who present early for supplementation might have a naturally lower risk of having fetuses with neural tube defects than controls, who are largely selected from women who are seen too late in pregnancy for supplementation (after neural tube closure at around 26 days from conception). The possibility of bias in selection has been re-examined by Smithell's group, who conclude that "periconceptional vitamin supplementation is associated with a significantly reduced rate" of neural tube defects, whatever the mechanism.[4]

Few would complain about the cost of giving Pregnavite Forte F to the small number of women at high risk of having fetuses with neural tube defects since it is cheap and the risks are small as it contains little more than an adequate diet should provide. About 90-95% of fetuses with neural tube defects develop, however, in women with no history to alert them to their risk. Consequently most pregnant women would need supplementation if most neural tube defects were to be prevented. The 700 000 or so women who become pregnant each year in Britain should not be submitted to a measure that has not been independently assessed. It would also be an unwarranted waste of NHS resources.

The Medical Research Council is currently running a randomised double blind trial examining the efficacy of the different ingredients of Pregnavite Forte F (although not Pregnavite Forte F itself) in women who have had a fetus with a neural tube defect. This trial has been criticised because the doses of the various components are different from Pregnavite Forte F, recruitment is from heterogeneous populations, and it is claimed to be ethically unsound to include women as getting "minerals only" who might thus be construed as untreated.[5] All women are, however, counselled at recruitment, and it is surely ethical if a woman agrees to participate after she has understood that the value of vitamin supplementation is not fully proved and that she has a 25% chance of being given minerals only. Despite its critics, the Medical Research Council trial has recruited about half the women needed, is expected to report in about five years time,[6] and is the best current prospect of new data.

It will still, however, leave open important questions. Can we assume that observations made on women at high risk are relevant to women in general? Equally important, might a weak teratogenic effect be shown by periconceptional vitamin supplementation of millions of women. Should we now be planning a new large scale trial to answer these questions? If so what supplements should we use and in what dosage? Although some believe that folic acid is the active ingredient,[7] and there is experimental evidence in support,[8] this is not yet generally accepted.

The first lesson to be learnt from this episode is never to embark on such trials without adequate controls. Secondly, with hindsight it was unwise to remove Pregnavite Forte F because the (welcome) decision to reinstate it has given the erroneous impression that its preventive powers have been independently proved. Thirdly, can the organisers of the Medical Research Council trial consider ways to accelerate recruitment to the trial to ensure a more speedy conclusion? Five years may be too long to wait given the present controversy and the possibility of pre-emptive population supplementation.

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Glasnost on pesticides

One of the many consequences of last year's general election was the curtailment of the House of Commons Agriculture Committee's inquiry into the effects of pesticides on human health. Unfortunately, the committee had insufficient time to consider and agree an account of its deliberations before the dissolution of parliament. A draft report by the chairman has, however, been published[1] and, although lacking the authority of consensus, should stimulate debate on its main conclusion—the need for more stringent and open evaluation of the hazards posed by agricultural chemicals.

The regulation of pesticides is vested mainly in the Ministry of Agriculture, Fisheries, and Food (MAFF) and its advisory committee on pesticides, although other agencies, such as the Health and Safety Executive, play a part in enforcing their safe handling. The report criticises the ministry for complacency, concluding that safety cannot be assumed merely from the absence of observed harmful effects. Rather the onus should be on the agrochemical industry to prove that its products are safe beyond reasonable doubt. Meanwhile those responsible for clearance of the products (the report recommends that control should pass from the Ministry of Agriculture to the Health and Safety Executive) must convince the public that they have the resources, knowledge, and independence to investigate potential health risks, and they must do so in a more open way. To this end the collection of epidemiological data must be improved. The report calls for a centralised system to coordinate all reports of pesticide poisoning and for more research into the long term effects of pesticide exposure, particularly in agricultural workers. In the laboratory the emphasis should shift from increasing numbers of routine tests to finding out more about mechanisms of toxicity.

The wording of the report is somewhat misleading. Safety is not an absolute that can be proved: research can only narrow the range of uncertainty surrounding risk estimates. Nevertheless, the requirement for stronger evidence of safety, particularly once a product is on the market, would be